

## CLAIMS

### I CLAIM:

1. A method of assigning a network identifier to a client node, the client node having a memory and being operably connected to a server wherein the server assigns the network identifier to the client node, the method comprising the steps of:
  - providing a default identifier, the default identifier being assigned to the client node;
  - determining a location of the client node, the location being identified with respect to the server; and,
  - assigning the network identifier to the client node in response to the determined location of the client node.
2. The method of Claim 1 wherein the determining the location of the client node comprises the steps of:
  - receiving a request for the network identifier;
  - transmitting a toggle signal, the toggle signal having an amount of state transitions;
  - storing the amount of state transitions in the memory; and,
  - identifying the client node having the default identifier and the amount of state transitions.
3. The method of Claim 2 wherein identifying the client node having the default identifier and the amount of state transitions comprises the steps of:
  - transmitting a request to receive the amount of state transitions stored in the memory of the client node; and,
  - comparing the amount of state transitions stored in the memory of the client node with the toggle signal wherein the network identifier is transmitted to the client node in response to the comparison.
4. A method of assigning a network identifier to each of a plurality of client nodes operably connected to a network, each client node being operably connected to a network server wherein the network server assigns a network identifier to each client node, the

method comprising the steps of:

- providing a default network identifier, each of the plurality of client nodes being assigned the default network identifier;
- requesting a network identifier, the request being made by the client node having the default identifier;
- determining the client node having the default identifier and being nearest to the server; and,
- assigning the network identifier to the identified client node, wherein additional, unique, network identifiers are subsequently assigned to each remaining client node having a default identifier and being nearest to the server.

5. The method of claim 4 further comprising:

- inserting an additional client node into the network; and,
- identifying the additional client node for assigning the permanent network identifier.

6. The method of claim 5 further comprising:

- optimizing the assigning of a network identifier, the optimizing comprising the steps of:

- monitoring a level of network interaction of each client node;
  - selecting a client node having a lowest level of network interaction; and,
  - assigning the network identifier in response to the selected client node.

7. A medium readable by a programmable device, the programmable device being operably connected to a network wherein the medium assigns a network identifier to a client node, the client node having a memory and being operably connected to the programmable device, the medium comprising:

- a first segment for determining a location of the client node, the location being identified with respect to the programmable device; and,

- a second segment for assigning the network identifier to the client node in response to the determined location of the client node.

8. The medium of Claim 7 further comprising:

- a third segment for receiving a request for the network identifier;

a fourth segment for transmitting a toggle signal, the toggle signal having an amount of state transitions;  
a fifth segment for storing the amount of state transitions; and,  
a sixth segment for identifying the client node having the default identifier and the amount of state transitions.

9. The medium of Claim 8 wherein the sixth segment further comprises:  
a request segment for transmitting a request to receive the amount of state transitions stored in the memory of the client node; and,  
a comparison segment for comparing the amount of state transitions stored in the memory of the client node with the toggle signal wherein the network identifier is transmitted to the client node in response to the comparison.

10. A method of assigning a network identifier to each of a plurality of client nodes operably connected to a network, each client node being operably connected to a network server wherein the network server assigns a network identifier to each client node, the method comprising the steps of:

providing a default network identifier, each of the plurality of client nodes being assigned the default network identifier;

requesting a network identifier, the request being made by the client node having the default identifier;

determining the client node having the default identifier and being nearest to the server; and,

assigning the network identifier to the identified client node, wherein additional, unique, network identifiers are subsequently assigned to each remaining client node having a default identifier and being nearest to the server.

11. The method of Claim 10 further comprising:  
inserting an additional client node into the network; and,  
identifying the additional client node for assigning the permanent network identifier.

12. The method of Claim 11 further comprising:  
optimizing the assigning of a network identifier, the optimizing comprising the

steps of:

monitoring a level of network interaction of each client node;  
selecting a client node having a lowest level of network interaction; and,  
assigning the network identifier in response to the selected client node.

13. A network comprising a server node and one or more operably connected client nodes wherein a permanent identifier is assigned to each client node in response to a location of each client node with respect to the server node, the network comprising:

the server node having an address input and an address output;

each of the one or more operably connected client nodes having an address input and an address output, the address input and the address output being operably connected to a microprocessor in the network client node;

a communication bus being operably connected to the server node and each of the one or more client nodes;

an address bus being operably connected the server node and each of the one or more client nodes, the address bus being connected between the output address of the server node and the input address of the nearest client node, the output address of the nearest client node being connected to the input address of the next nearest client node, wherein each subsequent operably attached client node is similarly connected to the network; and,

a network identifier being assigned to each client node, the network identifier of each client node being assigned a unique value in response to the location of each respective client node to the server node.

14. The communication network of Claim 13 wherein at least one of the client nodes is a placeholder node for reserving a network identifier for the position occupied by the placeholder node.

15. The communication network of Claim 13 wherein the network is CANOpen.

16. The communication network of Claim 16 wherein the client node is an output module.